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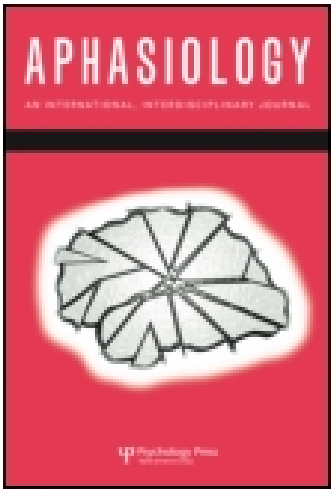

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Content analysis of the fairy tale Cinderella - A longitudinal single-case study of narrative production: "From rags to riches"

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Content analysis of the fairy tale *Cinderella* – A longitudinal single-case study of narrative production: "From rags to riches"

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Background: With regard to spontaneously produced speech and the oral production of a narrative, the content of the message(s) being conveyed by a person with Broca's aphasia with severe agrammatic sentence production must often be inferred from the telegraphic speech output. The clinician's inferences must often be revised to capture the intended meaning of a single utterance or sequence of utterances. When performing a formal analysis of such telegraphic utterances, researchers strive to provide an adequate reconstruction that approximates the speaker's intended meanings.

Aims: In this single-case study, multiple oral (re)tellings of the fairy tale *Cinderella* are analysed in terms of the *content* of the produced narratives. The aim of this study is to trace and determine how the *content* of a person with aphasia's production of this fairy tale changes over time, and to tease apart the contribution of various linguistic domains in the production of a narrative.

Methods & Procedures: Participant TH suffered a massive left hemisphere CVA at the age of 40 and was initially diagnosed as globally aphasic. By 36 months post onset his language impairment had evolved into Broca's aphasia characterised by agrammatic sentence production (oral and written language), mild apraxia of speech, and asyntactic auditory comprehension. He performed the task of orally (re)telling the fairy tale *Cinderella* eleven times over a 4½-year period, beginning 36 months post onset and extending to 93 months post onset of aphasia. His narratives were video- and audio-taped and the recordings were transcribed. The fairy tale *Cinderella* was interpreted in terms of its propositional content and its superstructure: orientation, development (episode 1, 2a, 2b, 3), complication (= 4), solution (episode 5), coda, and evaluation of the narrative (Labov, 2000; Labov & Waletzky, 1967). The content of TH's narratives was evaluated independently by three clinicians.

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Outcomes & Results: A marked increase in the number of explicitly produced content units was observed across test times. Longitudinally, TH produced more informative narratives as evaluated in terms of propositional content units, elaborations, and evaluations. These changes in performance are attributed to TH's improved lexical retrieval for both nouns and verbs, and also to his improved syntactic skills.
Conclusions: Qualitative and quantitative changes in producing the *Cinderella* narrative mirror TH's improved language processing, in particular his verb retrieval and oral sentence production skills. Longitudinally, analysis of the content of narratives provides insight into the evolution of text production with reference to the influence of several linguistic domains on narrative production. In summary, content analysis of orally produced narratives provides a departure point for examining the complex roles of various linguistic domains in the process of transforming ideas into articulated sentences and narratives.

Keywords: Oral narrative production; Fairy tale; *Cinderella*; Content analysis; Longitudinal case study.

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> "What is necessary for the story of *Cinderella* to be the story of *Cinderella*? Between the traditional fairy tale and King Lear, when does the story of *Cinderella* stop being *Cinderella* and start being something else? Is a magical transformation of *Cinderella* necessary? Is the ball necessary? Is the Prince's search for *Cinderella* necessary? Is the happy ending necessary?"
>
> (Porter Abbott, 2005, p. 19)

The above questions refer to the *content* of the fairy tale *Cinderella*. They indirectly address general and specific themes basic to verbal communication. These, according to Labov (2000), relate to being able to answer underlying questions such as: What was something about? Who? When? What? Where? So what? And then what happened? The final question being: What happened at the end? (see Labov, 2000, p. 234.) The story of *Cinderella* is just one example of a narrative that provides an opportunity to assess how well one's recollections of a past childhood experience—being told this fairy tale—can be recapitulated. Porter Abbott's (2005) questions directly address the issue of how much of the *content* of the fairy tale must be present in order for the produced narrative to still be considered the story of *Cinderella*. And although knowing the content is important, (re)producing a narrative such as a fairy tale requires a complex interaction of various processing components and linguistic levels. Ideally, the content of the fairy tale must be conceptually available and the chronological order of the series of events must be activated. Then it must be produced in the correct sequence of content units, i.e., propositions, in syntactically correct sentences consisting of semantically adequate lexical items in the correct verb tenses. The resulting narrative should be informative, coherent, and cohesive (deBeaugrande & Dressler, 1981).

When considering the oral language production of persons with a severe sentence production deficit, namely agrammatism, the cited questions become even more relevant. The intended message, or content of their messages, must often be inferred from their highly telegraphic speech output. With particular regard to text production by severely impaired agrammatic aphasic patients, the gap lessens in the process of recovery as the content of their utterances and narratives becomes richer. Assuming that the content of the fairy tale *Cinderella* is conceptually accessible, the increasing availability of information and the accessibility of word forms provide insight into *how* the processes of coordinating word forms with syntactic plans changes over time (Bock, 1987) and

also how narrative production—i.e., the oral productions of the fairy tale *Cinderella*—improve across time.

In this paper the content and superstructure of 11 (re)tellings of the fairy tale *Cinderella* produced by a person with Broca's aphasia are analysed for a period of 4 years.

The main unit of analysis in this study is the *proposition*. The proposition was selected because it is a basic unit of meaning (Clark & Clark, 1977) and it is close to the conceptual level of language processing. Propositional content constitutes the *substance* of a narrative. The propositional content of the orally produced narratives was analysed with reference to the implicit or explicit production of the propositions or the omission of the propositions assumed to make up the story of *Cinderella*. The superstructure postulated for the fairy tale *Cinderella* was based on Labov and Waletzky's overall structure of a narrative. It includes the elements: abstract, orientation, complicating action, evaluation, result or resolution, and coda. The superstructure represents the "schematic organisational pattern" (van Dijk, 1989, p. 3) for the narrative. It is the more or less conventionalised hierarchically organised form of the knowledge in question. In this case it refers to the narrative *Cinderella*, i.e., the overall structure of the story of *Cinderella.* The abstract is a summary of the narrative preceding its production. The orientation corresponds to the setting for the story. In the development, the story unfolds and is broken down into the complication and solution. The complicating action is further broken down into separate episodes. The episodes constitute the main sequences of events in the story. The ordering of the episodes is fixed for certain events; however, it can also vary with regard to other episodes. The evaluation encompasses the speaker's remarks concerning specific events. The solution refers to the end of the story, and it can be followed by the coda that brings everything together and can include a final evaluation: "… and they lived happily ever after".

Labov and Waletzky's framework encompasses the overall structure of a narrative and the propositional analysis addresses the content of the individual propositions, whereby providing a means for a comprehensive assessment of story retelling. In combination, both reflect a participant's skills for using language to communicate the critical elements that are needed for a story to be a story. Thus, such an analysis comprises basic text-level elements that go beyond counting correctly produced words or analysing syntactic forms.

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METHOD

Participant

TH is a 47-year-old, English-speaking, right-handed male, who suffered a massive left hemisphere CVA at the age of 40. His initial global aphasia evolved into Broca's aphasia. Although language data produced by TH from 36 to 93 months post onset of aphasia form the data for this study, various other language skills have been investigated starting 14.5 months post onset. At 36 months post onset, his speech was characterised by agrammatic sentence production in both the oral and written language modalities, mild apraxia of speech, and asyntactic auditory comprehension. His initial severe degree of impairment evolved into a moderate degree of impairment. (Excerpts from the transcripts of the narratives produced at 36 months post onset and at 93 months post onset are given in Appendix 1.)

Procedure

Over a 4-year period beginning 36 months post onset, the task of orally (re)telling the fairy tale *Cinderella* was administered to TH 11 times as part of the routine language testing performed pre and post therapy.

Longitudinally the routine language testing also included the Boston Naming Test (BNT) (Kaplan, Goodglass, & Weintraub, 1983), Action Naming Test (ANT) (Obler & Albert, 1979), and an oral sentence production (SPT, $n = 80$ items) (Stark, 1997). All tasks were videotaped and simultaneously taped on an Olympus digital voice recorder (VN3100PC).

Data analysis

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The digital audio recordings of the narratives were transcribed. Several parameters of the Quantitative Production Analysis (QPA) (Berndt, Wayland, Rochon, Saffran, & Schwartz, 2000) were applied for segmenting and characterising the produced narratives in terms of the narrative words, fillers, repetitions, and false starts (initial phonemes, whole words, and short phrases).

Based on the Labov and Waletzky schema (1967; Labov 2000)—consisting of the elements: orientation, development (episode 1, 2a, 2b, 3), complication (= 4), solution (episode 5), evaluation, and coda of the narrative—a superstructure for the fairy tale *Cinderella* was determined. With regard to this schema, the abstract is not included because for the task of (re)telling a fairy tale an abstract at the beginning of the narrative is not expected. Whereas an evaluation could be produced at any point in the narrative, the coda marks the end of the fairy tale. Each of these narrative elements was further broken down into respective content units or "propositions". For the fairy tale *Cinderella,* a total of 41 possible propositions was postulated to cover the whole story. Episodes 2a and 2b are considered not to have a fixed order—they can be interchanged. Verbatim match with a proposition listed in Table 1 was not required for a proposition to be counted as explicitly produced. Rather the intended meaning of the utterance was interpreted and considered to be equivalent to the content of the proposition being scored. When the content of a proposition was incomplete, it was scored as implicitly produced. In this case the meaning of the utterance approximated the content of the proposition in question. Each of the produced narratives was evaluated independently by three clinicians with regard to the propositions that were omitted, or implicitly or explicitly produced. The inter-rater reliability was at 90%. For the units rated differently, the original transcripts were discussed to arrive at a uniform decision. The list of content units or propositions for *Cinderella* is given in Table 1 according to its overall structure.[1]

[1]A different source of information was used to arrive at consensus of the information healthy control participants consider to be crucial for the (re)telling of this fairy tale. Ten healthy control participants were asked to analyse the list of propositions and to determine which propositions were necessary for a summary narration of the fairy tale *Cinderella*. On a second pass, the participants were asked to slim down their initial selection to the most essential, indispensable propositions. Those propositions agreed upon by (almost) all evaluators in this second-pass analysis are considered to be the *constituent* events (Porter Abbott, 2005). The constituent elements are preceded by an asterisk in Table 1. In several cases the healthy speakers' selection of a single proposition within a section of the superstructure differed. When two or three propositions were equally important the propositions are marked by {*}. For these propositions, any one of the two or three is considered to be crucial. Actual comparison of the retelling of the narrative by healthy control participants is required, as judging which information is crucial is an entirely different task. Thus this preliminary analysis was performed to gather more information regarding the propositions in the list.

TABLE 1
List of content units or "propositions" for the fairy tale *Cinderella**

Setting / Orientation

{*} P 1 be [Cinderella]: Once upon a time // A long time ago there was a girl/woman called Cinderella
{*} P 2 live [Cinderella, with stepfamily]: Cinderella lived with her stepmother and her stepsisters
P 3 do [Cinderella, housework]: Cinderella has to do the housework
* P 4 boss around/be mean [stepsisters, Cinderella]: The (spoiled) stepsisters boss Cinderella around/ are mean to Cinderella

Episode 1

* P 5 invite [prince, single women, ball, palace]: The prince invites all young single women to his ball in the palace
P 6 work [Cinderella, hard] Cinderella has to work hard
* P 7 cannot go [Cinderella, to ball]: that she cannot go to the ball
P 8 dress [stepsisters /stepmother, for ball]: The stepsisters and the stepmother dress for the ball
* P 9 be sad/cry [Cinderella]: Cinderella is sad/cries
P10 leave [stepsisters/stepmother, for ball]: The stepsisters and stepmother leave for the ball in a coach

Episode 2a

* P11 arrive/enter [stepsisters/stepmother, at palace]: The stepsisters and stepmother arrive at/enter the palace
P12 greet [prince, guests]: The prince greets all the guests
P13 dance [guests]: (At the ball) the guests dance
P14 eat [guests]: The guests eat

Episode 2b

* P15 appear/be here [fairy godmother]: The fairy godmother appears/is here
P16 see/find [fairy godmother, Cinderella (crying/sad)]: The fairy godmother sees/finds Cinderella (crying/sad)
* P17 perform [fairy godmother, magic]: The fairy godmother performs magic
* P18 turn into [fairy godmother, Cinderella, enchanting woman]: The fairy godmother turns Cinderella into an enchanting woman (dressed up in a gown with glass slippers)
P19 turn into [fairy godmother, pumpkin, coach and driver]: The fairy godmother turns a pumpkin into a coach and/with a driver
P20 turn into [fairy godmother, (two) mice, horses]: The fairy godmother turns (two) mice into horses
* P21 warn [fairy godmother, Cinderella, about midnight]: The fairy godmother warns Cinderella about leaving the ball by midnight
P22 leave [Cinderella, for ball, in coach]: Cinderella leaves for the ball in the coach

Episode 3

P23 be/arrive [Cinderella, at palace]: Cinderella is/arrives at the palace
* P24 see [prince, with Cinderella]: The prince sees Cinderella
* P25 dance [prince, with Cinderella]: The prince/He dances with her
P26 watch [guests, Cinderella and prince]: The stepsisters/All the guests are watching them

Episode 4 = Complication

* P27 strike [clock, midnight]: The clock strikes midnight
P28 leave/run out of [Cinderella, palace]: Cinderella leaves/ runs out of the palace
* P29 lose [Cinderella, glass slipper]: Cinderella loses a glass slipper
* P30 find [Prince, glass slipper]: The prince finds the glass slipper
P31 be transformed into [Cinderella/coach and driver, original state]: Cinderella /the coach and the driver are transformed (back) into their original state

Episode 5 = Solution

P32 want [Prince, find owner]: The prince wants to find the owner of the glass slipper/Cinderella
* P33 go [Prince (and servant), from town to town/door to door]: On the following days the prince (and his servant) go from town to town/door to door

(Continued)

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TABLE 1
(Continued)

* P34 look for [Prince and servants, Cinderella]: Prince (and servant) looks (look) for Cinderella/the person whose foot fits into the glass slipper
P35 try on [stepsisters, glass slipper]: (At Cinderella's house) The stepsisters try on the glass slipper
P36 not fit [glass slipper, stepsisters]: The glass slipper does not fit the stepsisters
* P37 try on [Cinderella, glass slipper]: Cinderella tries on the glass slipper
* P38 fit [glass slipper, Cinderella]: The glass slipper/It fits Cinderella

Coda
{*} P39 be happy/together [prince and Cinderella]: The prince and Cinderella are happy/together again
{*} P40 marry/get married [prince and Cinderella]: The prince and Cinderella marry/get married
{*} P41 live [prince and Cinderella, happily]: They live happily ever after

Those propositions preceded by an asterisk are considered by healthy control participants to be the constituent events on a second pass analysis. In the case of two or three successive propositions marked by {}, one of them is considered to be a constituent event by a majority of the control participants.

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After determining the presence/omission of the propositions, the transcripts of the narratives were assessed in terms of whether evaluative devices were present (cf. Olness, 2010 this issue). These devices included *information intensification*, *a slowing or suspension of the progression of the event line to call attention to that part of the narrative*, *using irrealis forms* and *the use of literal* or *figurative comparisons.*

RESULTS

An analysis of the content units or "propositions" with respect to the number of omitted, or implicitly and explicitly produced content units for 11 recitations of *Cinderella* is given in Table 2.

For the *Cinderella* narratives produced at 36 months post onset until 56 months post onset, the number of omitted content units was high: 22, 16, 13, 14, respectively out of a possible total of 41 target units. The number of implicitly produced and explicitly produced units was comparable. As of 62 months post onset, the number of explicitly produced units showed a marked increase (n = 20, 24, 32, 33, 28, 34, and 35) from an initial 12% explicitly produced units to 85%. Initially 54% of the possible target units were omitted and 34% implicitly produced. At 93 months post onset only 7.3% of the propositions were omitted and 7.3% were implicitly produced. TH's last two narratives represent his best performance. For the retelling produced at 90 months post onset, TH omitted 3, implicitly produced 4, and explicitly produced 34 out of the possible 41 target propositions. A similar performance was observed for the most recent (re)telling of *Cinderella* version at 93 months post onset: 3 were omitted, 3 implicitly, and 35 explicitly produced content units.

In terms of the number of propositions produced, although a steady improvement was observed, at 82 months post onset TH's performance was not as good as it was for the retellings at 72 and 79 months post onset. A rank ordering of the 11 (re)tellings in terms of overall performance is given in Appendix 2. At 82 months post onset he implicitly stated the propositions for Episode 2b; namely, the propositions regarding the magical transformations. Across time, the scores for the BNT, ANT, and orally produced sentences (Sent.Prod./SPT) depicted in Figure 1 show a steady increase in

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TABLE 2
Content analysis

Structure	*Setting/ Orientation (n = 4 Prop.)**			*Development Episode 1 (n = 6 Prop.)*			*Development Episode 2[a] (n = 4 Prop.)*			*Development Episode 2b (n = 8 Prop.)*			*Development Episode 3 (n = 4 Prop.)*			*Complication Episode 4 (n = 5 Prop.)*			*Solution Episode 5 (n = 7 Prop.)*			*Coda (n = 3 Prop.)*			*Total propositions (n = 41) [percent]*		
Months post onset	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*	*Om*	*Imp*	*Expl*
36	2	1	1	6	0	0	1	2	1	3	5	0	1	1	2	2	0	3	5	2	0	2	0	1	22 [53.7	14 34.1	5 12.2]
41	1	2	1	1	4	1	4	0	0	2	6	0	2	2	0	3	1	1	3	3	1	0	1	2	16 [39.0	19 46.3	6 14.6]
48	1	2	1	3	2	1	2	0	2	2	5	1	1	2	1	1	2	2	2	5	0	1	1	1	13 [34.1	19 46.3	9 19.5]
56	1	2	1	2	3	1	2	0	2	2	4	2	1	2	1	3	2	0	3	2	2	0	3	0	14 [31.7	18 43.9	9 24.4]
62	1	1	2	0	4	2	2	0	2	0	1	7	2	1	1	3	1	1	2	1	4	0	1	2	10 [24.4	10 24.4	20 51.2]
69	0	1	3	0	1	5	2	1	1	1	1	6	1	1	2	3	0	2	2	1	4	0	2	1	9 [22.0	8 19.5	24 58.5]
72	0	1	3	0	1	5	1	0	3	1	0	7	0	0	4	1	1	3	2	0	5	1	0	2	6 [14.6	3 7.3	32 78.0]
79	0	1	3	0	1	5	0	0	4	0	1	7	0	1	3	1	1	3	2	0	5	0	0	3	3 [7.3	5 12.2	33 80.5]
82	0	1	3	0	2	4	0	0	4	1	3	4	0	0	4	1	1	3	2	1	4	0	1	2	4 [9.8	9 22.0	28 68.3]
90	0	0	4	0	1	5	0	0	4	0	0	8	0	1	3	1	2	2	2	0	5	0	0	3	3 [7.3	4 9.8	34 82.9]
93	0	0	4	0	1	5	0	0	4	0	0	8	0	0	4	1	1	3	2	1	4	0	0	3	3 [7.3	3 7.3	35 85.4]

Content analysis of the fairy tale *Cinderella* for 11 recitations according to the number of omitted, implicitly versus explicitly produced target propositions (Prop.) based on a breakdown of the superstructure into 41 target units. *The notation (*n* = x Ps) stands the total number of postulated target content units or "propositions" for the particular section of the fairy tale *Cinderella*. The overall number of postulated target propositions for a *complete* retelling of the fairy tale *Cinderella* is 41. For example, four propositions are postulated to make up the setting. At 36 months post onset for the setting, 2 out of the 4 propositions were omitted, 1 was implicitly and 1 explicitly produced.

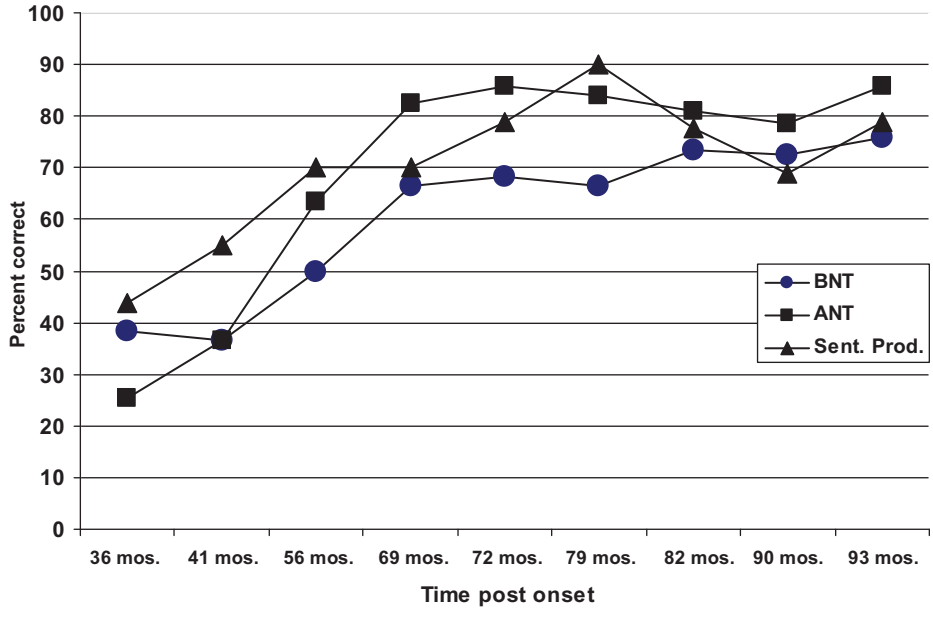

Figure 1. Longitudinal language test results for object naming (Boston Naming Test, BNT), verb naming (Action Naming Test, ANT), and for an oral sentence production task (Sent. Prod.) from 36 to 93 months post onset.

TH's abilities to retrieve nouns and verbs, and in producing grammatically correct sentences. As shown in Figure 1, TH's object naming (BNT) increased from 33% to 76% correct. His verb naming performance shows a similar pattern (22% to 86 % correct).

In Figure 2 the overall distribution of narrative words, fillers, repetitions, and false starts (phonemes, whole words, or phrases) is provided over time. The percentage increased from 40% (41 months post onset) of the total produced words to between 65% (93 months post onset) and 68% (at 82 and 90 months post onset). The percentage of fillers decreases over time, but the absolute number is still high even at 93 months post onset. Quantitatively speaking, according to the criteria put forward in QPA (Berndt et al., 2000), the increase in the total number of narrative words produced by TH depicted in Figure 2 highlights the longitudinal changes in lexical retrieval for narrative production. In terms of actual numbers, TH produced 209 narrative words in his first retelling at 36 months post onset. The number of narrative words increased over retellings from 209 to 1660: 209 →180 → 349 → 448 → 450 → 653 → 774 → 962 → 915 → 1202 to 1660 narrative words in his last retelling. The number of fillers remained high. However, the initial lengthy pauses were greatly reduced and his speech output became more fluent. At 41 months post onset TH produced the shortest narrative. With the exception of the first two retellings, a continuous increase in the number of narrative words produced over time was observed. Overall the number of narrative words produced per minute also showed an increase, although the rate showed more variation across retellings. In Table 3 the speaking time for each narrative and the number of narrative words produced per minute are summarised.

To exemplify the overall changes in the word production, the total number of produced words and the number of different words are presented in Table 4 for narrative words, verbs, and nouns for four retellings of *Cinderella* at 36, 56, 72, and 93 months

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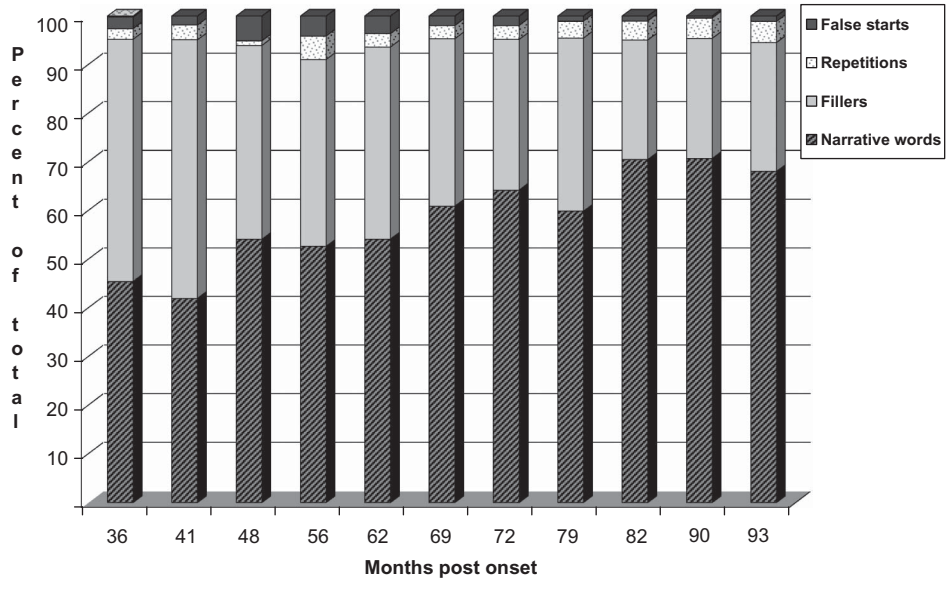

Figure 2. Overall distribution of narrative words, fillers, repetitions, and false starts expressed as percentage of the total words/forms produced for 11(re)tellings of the fairy tale *Cinderella* according to months post onset.

TABLE 3
Number of narrative words produced per minute according to months post onset

Months post onset	*Number of narrative words Produced*	*Speaking time for narrative (minutes)*	*Narrative words produced per minute*
36	209	8.83	23.7
41	180	9.7	18.5
48	349	13.12	26.6
56	448	15.88	28.2
62	450	16.15	27.9
69	653	19.5	33.5
72	774	22.26	34.8
79	962	29.5	32.6
82	915	32.0	28.6
90	1202	34.5	34.8
93	1660	50.36	33.0

post onset. In comparison to TH's first Cinderella narrative, he produced 10 times more different verbs in his most recent retelling at 93 months post onset. With reference to nouns, he produced approximately four times more different nouns in his most recent narrative in contrast to his first one at 36 months post onset.

Regarding the content of the narratives, the increased number of produced propositions, the overall number of narrative words, verbs, and nouns produced by TH, as well as the number of different narrative words, verbs, and nouns, illustrate the marked changes in TH's ability to convey the content of the fairy tale *Cinderella* across time.

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TABLE 4
Four retellings of *Cinderella*

Months post onset	*Total narrative words*	*Different narrative words*	*Total verbs*	*Different Verbs*	*Total nouns*	*Different nouns*
36	209	59	22	7	70	28
56	448	115	73	30	119	44
72	774	158	119	40	169	61
93	1660	287	298	69	400	98

Total number of narrative words, verbs, and nouns, and different narrative words, verbs, and nouns produced for four retellings of *Cinderella* at 36, 56, 72, and 93 months post onset.

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DISCUSSION

Longitudinal analysis of the content of narratives provides insight into the evolution of text production with reference to the possible influence of the accessibility of information (e.g., conceptual accessibility, lexical accessibility, and lexical selection) (Bock, 1987). With regard to the production of a fairy tale, the content is constrained by the story on the one hand. (This constraint sets the fairy tale apart from the personal narrative.) On the other hand, as a text-level task, the overall length is not constrained, neither are the possibilities to elaborate on the text and to use evaluative devices. Thus, language data obtained from this task provide an opportunity for observing changes in content and also in form, i.e., syntactic structure. In this context, the ramifications of improved lexical retrieval for both nouns and verbs are most prominent for this text-level task. As performance on both naming tasks improved, it is difficult to determine the main effect of a single grammatical category on TH's narrative production. Taken together, the language data summarised in Figure 1 and Tables 2, 3, and 4 support the assumption that when lexical retrieval improves, the ability to produce a narrative will also show marked changes in content.

Producing a narrative such as a fairy tale without the use of picture elicitation stimuli requires access to and mobilisation of numerous linguistic as well as memory skills. It is a more difficult task than describing what is depicted in a single picture or a sequence of pictures. In this study, prior to the production of the fairy tale, TH was not shown any picture booklet, which might have helped to activate various content units (cf. QPA test booklet or the AphasiaBank test protocol). Thus his performance can be seen as improved language skills on the word to sentence level and possibly better recall of details of the story.[2] TH's first C*inderella* narrative at 36 months post onset is highly agrammatic, although his lexical retrieval for verbs and nouns improved in the first 35 months, as demonstrated by his language test scores for BNT, ANT, and oral sentence production. TH's most recent narrative (93 months post onset) exemplifies his present performance level in terms of syntactic structure, semantics, text coherence, and cohesion. In his final version, all of the constituent propositions listed in Table 1 were either implicitly or explicitly produced.

The overall structure (i.e., the superstructure) of TH's narratives is intact in all 11 retellings of the *Cinderella* story. The main parts of the narrative are present,

[2]TH was tested on the Pointing Span for Noun-Verb Sequences (Task 60 from the PALPA; Kay, Lesser, & Coltheart, 1992). Initially he pointed to two names. His performance improved to five items, i.e., he managed to correctly point to sequences consisting of five names or SVO/SV structures.

although initially in a very telegraphic form. In the first versions, the typical introduction and ending of a fairy tale, i.e., "once upon a time" and "they lived happily ever after" were produced in a "telegraphic" form. In the last versions, TH began the fairy tale with "A long time ago" and "one day in the country". In those versions, he ended the fairy tale with "The new bride and uh prince happy after" or "We are enjoy the rest of the life … The two people going out in the cart [=coach] and driving a long way. The end". There were only two instances in which all of the postulated propositions for a specific part of the superstructure were omitted: In his first *Cinderella* narrative, all six propositions of Episode 1, and in his second version, none of the content units for Episode 2a were produced.[3] In all of the retellings he did not produce every one of the constituent elements, i.e., those content units considered by the healthy control participants to be essential. However, he did produce a majority of the content units highlighted in Table 1, although the individual units varied across the test times. (Although it is a very different task, healthy control participants show great variation in their judging of the essential content units on a first pass basis. See footnote 1.)

Although TH's first retellings from 36 to 56 months post onset are agrammatic, since elements from each part of the superstructure were present, a primary text-level impairment can be ruled out. A primary text-level impairment would entail a mis-ordering of relevant information, e.g., presenting the solution before the complicating action(s). In contrast, it is difficult to decide whether a *primary* text-level impairment is present when whole parts of the superstructure that contain crucial information are missing. When whole sequences are omitted, e.g., the scene at the ball culminating in the loss of the glass slipper, the source of the problem could be a recall problem or severe word-finding difficulties. However, in this case the textuality criteria including cohesion, coherence, situationality, and informativity are violated (de Beaugrande & Dressler, 1981).

Over time, the content of TH's narratives has become richer, i.e., more informative as evaluated in terms of propositional content units, elaboration of the content of propositions, and the use of evaluative devices. These changes are assumed to be due mainly to his overall improvement in lexical retrieval, in particular his verb retrieval as shown in Figure 1. Although many of TH's utterances are still agrammatic even at 93 months post onset, an improvement in terms of their syntactic structure was observed. Grammatically correct complex sentences in various tenses were observed in the most recent narratives. This is assumed to be the carryover of a therapy effect to the test situation. The intensive therapy provided to TH emphasised lexical retrieval for verbs and nouns in a natural setting of oral sentence production (cf. Stark, 2010). In later protocols the programme was expanded to include work on various tenses (simple past and future) and negation (as of therapy protocol VI), and the development and production of mini-dialogues based on the content of the individual sentences worked on in therapy (as of therapy protocol V). The determining factor for the marked changes in TH's narrative performance is considered to be the long-term build-up and continual improvement of his language skills as a result of the intensive language therapy in which he participated in the chronic phase. This process is discussed in Stark (2010). Often the selection of the picture stimuli and/or topic for the therapy

[3]See Footnote 1. Episode 2a was not judged by healthy control participants to be crucial for the story of *Cinderella*. In this regard, TH's produced narratives comply with the control participants' judgement of the most important propositions. It must be stressed that, in contrast to orally producing the narrative *Cinderella,* judging which propositions are crucial for the story of *Cinderella* is a different task.

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sessions was based on TH's own suggestions. This made the content of the sessions relevant for his everyday verbal communication. The content of the trained materials stemmed from his life situation and was directly put to use outside the therapy setting. This point is alluded to as it is considered to have an overall effect on TH's verbal communicative abilities.

In terms of the content of the narratives, particular target content units were never produced by TH (e.g., P31, P35, P36) and one important unit was not explicitly produced (P5) even in his most recent version—namely that the prince invites all eligible females to the ball. The implicit formulation encompassed a reference to the ball being given by the prince and that the stepsisters talk about going to the ball. In most cases, when a content unit was omitted in his recitation the initial omission evolved into the implicit production of that content unit in a following version or versions. Further improvement resulted in the explicit mention of the content. One specific aspect of all of TH's versions that differed from the original version was that he systematically referred to three stepsisters. The stepmother was never mentioned. Due to this systematic mention, this departure from the story line was not considered an error. The investigator did not make TH aware that the stepmother was missing, in order *not* to change the test situation for future (re)tellings.

Support for the idea that TH has not overlearned or learned the fairy tale by heart from retelling to retelling is that there is variation in the propositions produced over time and also in the manner in which they are produced: implicitly or explicitly. Although it is difficult to characterise the actual use of gestures and mimics in words, this also varied for the retellings across time. TH's gesturing added to the content of the produced text at very crucial points in the narrative. It functioned as a substitute for specific events that were difficult for TH to formulate in words, and as a way of intensifying the presented information. The intensity of the magic performed by the fairy godmother and the verbal behaviour (i.e., slurred speech) of the inebriated sister at the ball are two of the examples for which TH used gestures to communicate very effectively the content of specific propositions, e.g., in the seventh retelling:

> Oh no! Godmother! Wow! Jesus! Uh . How are you? Fine. Uh um please old jeans and shirt and not funny. Uh maybe new dress and slippers and uh…uh. Hair and uh hat? Yes please, please. Alright wait! [With his eyes closed and waving his left arm as if performing magic, TH makes inarticulate sounds to imitate magical sounds] New dress! Wow! Oh Jesus! Amazing! Fantastic! Wow! You are unbelievable! Wow! And alright.. wait, wait Hooh! [same as above; makes inarticulate sounds to imitate performing magic] Slippers! Wow! Oh you are amazing, wow! Slippers and uh […] Out in the garden .. uh two mice, alright? Wait [same as above, TH makes inarticulate sounds as if performing magic] Yes, horses! Yes! Wow! And wait, wait. Ah pumpkin, yes, alright [same as above, TH makes inarticulate sounds as if performing magic] Oh, carriage! Wow!

In the process of producing passages such as the above example, TH becomes very emotional and exuberant. He makes use of gestures (i.e., waving his arm), mimics (i.e., closing his eyes), and "language" (i.e., inarticulate sounds) each time he presents the magical scene with the fairy godmother. He also uses direct speech to highlight the roles of the various persons in the narrative (cf. Tannen, 1989). The alternating use of language and gestures demonstrates that the task is a dynamic one and one utterance/gesture leads to another: "Utterances are not just static verbal objects but ongoing dynamic accomplishments, that is, forms of action" (van Dijk, 1989, p. 3). TH's changes in narrative production illustrate this point very well. Analysis of TH's text production

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with regard to the relationships among various sign systems in building up predicate-case role(s)—in particular between verbal and nonverbal behaviour—is planned, in particular the parasemantic function of gesturing in text production (see Stark, Bruck, & Stark, 1988).

Several themes or elaborations are repeated throughout the narrative, especially in the later and lengthier versions. For several target units TH produced elaborations for the propositions that reflect his sometimes exaggerated interpretation of the fairy tale. For example, one of the stepsisters was considered to be inebriated as of the seventh retelling of the fairy tale; that is, as of 72 months post onset (retelling at 93 months post onset):

> And the one sister .. 'I had. Uh drinking uh wine and uh yes, very good' [imitates the drunken sister] and one sister: 'Leave it alone alright! I will drink uh champagne, alright [TH laughs] Yes' The sisters had a difficult time at the table with drinking." […] Uh one sister: 'You will not even uh with Prince, alright! And the Cinderella says: 'You are drinking a lot of wine. Sit down and where's two sisters?' And the one sister: 'You will not even uh talk with .. the prince, alright? [imitates the drunken sister]…

Longitudinal analysis of the narratives also demonstrates how achieved gains in everyday language use are carried over to the task of (re)telling *Cinderella*. TH put his everyday, accessible vocabulary to use by attributing his household activities to Cinderella's daily routine, e.g., ironing, vacuuming, etc. The content units of TH's narratives were adapted to accommodate his more accessible lexical units and a more modern version of the fairy tale. In the last narrative, TH comments that "Then Cinderella and prince both had sex".

At 36 months post onset, TH's narratives were highly agrammatic. Based on the form and content of the narratives, and also on the manner of producing them (e.g., hesitations, filled and unfilled pauses, etc.), it is evident that the task was a difficult one for him (see Figure 2). He searched for the words to capture the content of the story he wanted to tell in the context of his word-finding difficulties for both nouns and verbs. His articulatory difficulties contributed to the overall task difficulty. In later retellings, especially in the last four narratives, TH made use of several evaluative devices. TH became the "storyteller" he had probably been prior to his stroke.[4] In the later versions, evaluation was more prominent throughout the narrative (as of 90 months post onset). Of the four devices discussed by Olness (2010 this issue, and Labov, 2000; see also Tannen, 1989), TH's narrative skills showed a predominance of the use of the second device *information intensification.* That is, by means of repetition of information (e.g., "Waiting and waiting and waiting", "knocking and knocking on the door", "please! please!"), pitch maxima especially for the magical scene, and for the coda, the use of direct speech in asking and answering specific questions, he emphasised parts of his narrative. The first device, *a slowing or suspension of the progression of the event line to call attention to that part of the narrative* was also evident in his later versions, e.g., by means of repetition of information and to a lesser degree by addressing the listener directly (Olness, 2009, 2010 this issue).

[4]This assertion is based on his professional background and information from family members and friends. Professionally TH worked as a radio announcer and moderator. He had his own radio programmes for which he was responsible for the entire content. Family members reported that he was the one who could entertain company and hold an audience.

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The last two devices of narrative evaluation—*using irrealis forms* and *the use of literal or figurative comparisons*—were not yet observed in his narratives. In the last three versions, approximations were present in his narratives; however, the first two forms were more prevalent throughout the produced narratives. TH has begun to use the future tense, the past tense/past progressive tense, and modals in specific questions, e.g., "Would you … and me ... uh marry each other?" Examples of metaphor, similes, and real superlatives were not found in the produced narratives. It must be stressed that these two forms of evaluative devices also require a greater command of linguistic skills. Qualitatively speaking, TH's first production of Cinderella at 36 months post onset compared with the latest reveals an increased number of more complete utterances also in direct speech and the use of interrogative pronouns.

Elaborations to the text and evaluations are considered to result from TH's enhanced lexical processing. For the first four retellings (36 to 56 months post onset) it is often difficult to decide whether a proposition is even implicitly produced. This may be an indication that those content units are conceptually inaccessible. Elaborations and repetitions of particular information are made to both relevant content units (e.g., cleaning the house, performing magic) as well as to irrelevant ones ("the guests are eating, drinking, joking, laughing …").

In summary, longitudinal analysis of the content of TH's narratives provides insight into the complexity of text processing and reveals how the initial gap between the assumed meaning of messages and the actually produced utterances lessens over time as a function of improved linguistic skills (conceptual accessibility, lexical accessibility, lexical retrieval) and syntactic skills that, metaphorically speaking, have evolved "from rags to riches".

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APPENDIX 1

Excerpts from the original transcripts of the *Cinderella* narratives.

Retelling at 36 months post onset

Setting: Uh...the...house is...uh...two...uh...too...uh...s...uh s…[ ]spe// uh sep…[J: step-]

T: step uh...uh...sep...sep...sisters, yes. [..] And uh...uh..the uh...uh.. (sighs) uh the uh Cindererra is…uh washing... and ironing... and uh mop and uh… uh.. sweeping, yes? And uh… and the step- sisters.. in the big big uh..uh…big palace, yes?

Episode 2b: And um.. uh…and um.. the..f.. f uh… the… fairy..fairy g//.godmother.. is…wish and..uh…uh…Cindererra is..here… and uh.. uh… dress and shoes… and earrings. and.. yes! And uh..uh…mouse and uh…horse: ah yes! And uh..uh…carriage and um.. uh…man, yes?

Solution and Coda: Land, yes! And uh...uh...pl uh...hm... uh…uh…uh…palace uh no… um…pi uh…pl…oh…sorry…oh…and uh…uh..guy..no! Yes! Uh…the…shoe is..here! And.. Cill// uh Cillelella is… no! Oh! Yes! Thank you! And uh… the.. uh… pl// uh plink? No….prince is here and uh… and uh… Cinelella and..prince happy. Yes!

Retelling at 93 months post onset

Setting: One day in the country uh .. three sisters and wonderful uh Cinderella in the uh farm. And Cinderella asked one sister about uh. going to the big uh.. palace. Alright?

Episode 2b: And.. one minute later.. god fairy uh prise "Wow!" [7] Cinderella was shocked. And "you! Wow! How are you?" "Good!" The godmother was wa- waving and uh. the.. godmother asked "How are you? Good? You will uh..You will uh clean out with uh.. uhm..." Wait! "You will change.. the dress uh [8] amazing dress. And slippers and earrings and crown. Alright? Very nice with wonderful dress. And and! Then you will uh go out in the uh coach and uhm.. nice. uh. uh. mouses and uh nice uhm uh.. pumpkin. Yes. And and horses! Wooah! Very good. And two uh- two coaches with uh.. [9] two coaches with uh guys. Alright? Very good." And Cinderella was shocked and uh.. shocked and uh.. surprise. "Me? Me? Uh thank you for the wonderful dress and new uh.. uh.. crown and slippers and wonderful earrings and oh! Thank you for the wonderful moment. Yes." and the godmother is uh [10] standing up and she was uh… making a wish and (strange noises imitating magical sounds) ooooh! Beautiful dress! Woah! Yes! Alright! Wohoo! And the Cinderella was unbelievable with uh. new clothes. Wow! Hohoho! Amazing. Uh.. and the godmother.. uh says "Go up and uh.. uh and uh.. and. d- get dressed, alright? [11] And uh one- four

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five minutes.. you will uh.. you will uh.. be uh wonderful prince yes? Princess. And uh…uh.. out in the uh.. yard uh.. you will uh go out in the garden and see. Alright?" And the uh.. Cinderella was upstairs cleaning and bathroom and uh uh wonderful uh..![12] uh time uh.. with wonderful dress and slippers and earrings and crown. And.. then.. they were out in the garden and…unbelievable coach. What…with uh.. uh.. coat.. coat? No. Coat? J: Coach. T: Coach yes. And new horses and new uh.. wonderful guys. Wooah! Nice. And the uh uh…the [13] godmother says "Come here. Uh.. you will go out in the town and uh beautiful princess. Alright? And and.. uh.. midnight.. you will uh.. go…uh. out in the uh here. Alright? Alright? Don't be long. Alright?"

Coda: Then Cinderella and prince both had sex. (laughs) And [48] uh.. the three sisters "Oh.. oh.. uh.. no! No! Please! No! I want to uh.. try with uh…one slipper, please!" and the prince "No. Sorry. You and two sisters go and uh.. in the kitchen in the barn uh.. have a wonderful day. Alright?" and.. uh…"We are enjoy the rest of the life, alright? [49] and uh.. Cinderella please, marry me? Yes?" Oh no! And the Cinderella is tall and handsome and the.. two uh.. two.. people.. going out in the cart and driving.. a long way. [] Oh Jesus! …They…was.. they did uh.. wonderful [50] uh.. honey uh.. moon.

APPENDIX 2

The overall ranking of the *Cinderella* narratives for the 11 (re)tellings based on the omitted, or implicitly or explicitly produced content units

Descriptive statistics

Rank order for retelling of the narrative according to months post onset	*N (total no. of possible props.)*	*Minimum (omitted)*	*Maximum (explicitly)*	*Mean*	*Standard deviation*
36	41	.00**	2.00**	.5854	.70624
41	41	.00	2.00	.7561	.69930
48	41	.00	2.00	.8537	.72667
56	41	.00	2.00	.9268	.75466
62	41	.00	2.00	1.2683	.83739
69	41	.00	2.00	1.3659	.82934
82	41	.00	2.00	1.5854	.66991
72	41	.00	2.00	1.6341	.73335
79	41	.00	2.00	1.7317	.59264
90	41	.00	2.00	1.7561	.58226
93	41	.00	2.00	1.7805	.57062

**The variables for this ranking were: 0 = omitted proposition, 1 = implicitly produced proposition, and 2 = explicitly produced proposition. The ranking is based on the values for the 41 possible propositions listed in Tables 1 and 2. Thus the minimum score for an omitted proposition is 0 and the maximum score of 2 is given for an explicitly produced proposition.

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